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INFLUENCE OF RED PEPPERONI ADDITION ON THE QUALITY CHARACTERISTICS OF KASHKAVAL CHEESE

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Abstract: *This study aims to conduct an analytical and comparative evaluation of a traditional Kashkaval cheese and a Kashkaval cheese flavored with red pepperoni. Two types of Kashkaval cheese were produced under similar technological conditions: a control sample (classic Kashkaval) and an experimental sample with the addition of red pepperoni. The inclusion of pepperoni was intended to enhance the sensory profile and introduce functional compounds such as capsaicinoids and natural antioxidants. Comparative analysis indicated that the addition of pepperoni did not negatively affect the texture or structural integrity of the cheese, while contributing positively to aroma and overall acceptability. The study highlights the potential of incorporating natural flavoring agents in Kashkaval cheese to diversify the product range.*

• Introduction

Kashkaval is a semi-hard, stretched-curd (pasta filata) cheese with a long tradition in the Balkans and Southeast Europe, produced by enzymatic coagulation of milk followed by curd scalding and kneading. It is characterized by an elastic, compact texture, good melting properties, and a rich lactic flavour. The saturation of the market with classic Kashkaval variants drives the need for product innovation. Red pepperoni (*Capsicum annuum*) is a mild-to-medium-heat chili (100–500 SHU) containing capsaicin, carotenoids, vitamin C (60–120 mg/100g), and natural antioxidants, bioactive compounds with potential to enhance both the sensory and functional value of cheese without altering its traditional character.

The aim of this study was to develop and characterize a red pepperoni-flavored Kashkaval and to compare it with a classic sample, evaluating physicochemical parameters and sensory attributes after 30 days of ripening.

• Material and method

Two types of Kashkaval cheese were produced under the same technological conditions: (1) Control sample – classic Kashkaval cheese, produced according to the standard recipe; (2) Experimental sample – Kashkaval cheese with the addition of finely chopped red pepperoni (*Capsicum annuum*). Sensory evaluation was performed by a trained panel using a structured scoring system assessing appearance, color, texture, aroma, and taste. Both samples were subjected to physicochemical analyses (moisture, fat content, pH, salt). The results for all determinations were expressed as arithmetic mean (X) ± standard deviation (sX). Given the exploratory nature of this study, comparisons between the control and experimental samples were performed descriptively, without formal statistical inference.

• Results and discussions

Regarding sensory characteristics, both samples presented a regular form, smooth surface, semi-hard elastic consistency, and fresh lactic odour. The control sample displayed a uniform golden yellow colour and a balanced, mild lactic-sweet flavour. The experimental sample differed notably in appearance, showing evenly distributed red pepperoni fragments, bright red inclusions, moderate spiciness with a pleasant aftertaste, and a subtle vegetal-spicy aroma, scoring higher in overall acceptability and flavour complexity. No textural defects, cracks, or off-odours were observed in either sample.

From a physicochemical standpoint, both variants performed comparably. For the experimental sample, moisture averaged 42.78%, fat in dry matter 48.99%, NaCl 2.12%, and pH 5.2, all compliant with applicable standards. The addition of red pepperoni at 10 g per 10 L of milk did not alter any physicochemical parameter, and the slight variation observed between individual samples reflects natural heterogeneity inherent to artisanal-style production. The physicochemical results for the experimental sample are prezented in Table 1.

Table 1. Physicochemical characteristics of the Kashkaval cheese samples

Parameter	P1	P2	P3	P4	P5	Mean ± SD
Moisture (%)	47.22	41.99	43.25	40.16	41.29	42.78 ± 2.72
Fat in DM (%)	49.50	47.28	49.02	48.44	50.70	48.99 ± 1.27
NaCl (%)	1.96	2.05	2.24	2.38	1.99	2.12 ± 0.18
pH	5.2	5.1	5.0	5.2	5.5	5.20 ± 0.19

• Conclusions

The addition of red pepperoni represents a promising approach for Kashkaval product diversification. Sensory assessment proved a superior overall quality of the product: complex, balanced flavour, attractive red-speckled appearance, and semi-hard texture without structural defects. Red pepperoni thus proves to be a viable natural flavouring agent for Kashkaval cheese enrichment.

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